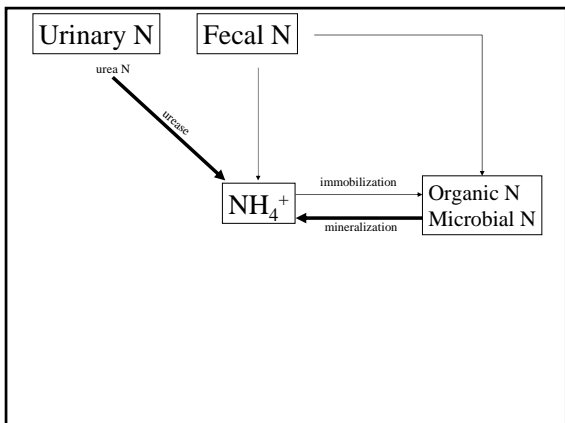


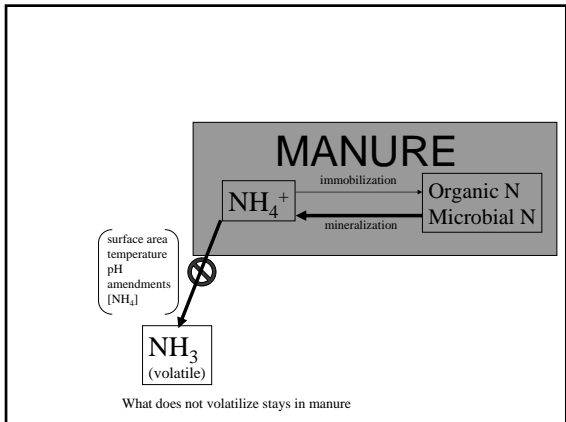
Methods to increase manure N in open beef feedlots

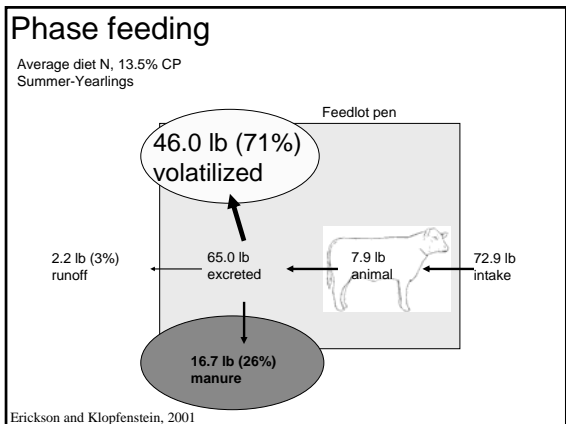
Galen Erickson, Terry Klopfenstein,
many students

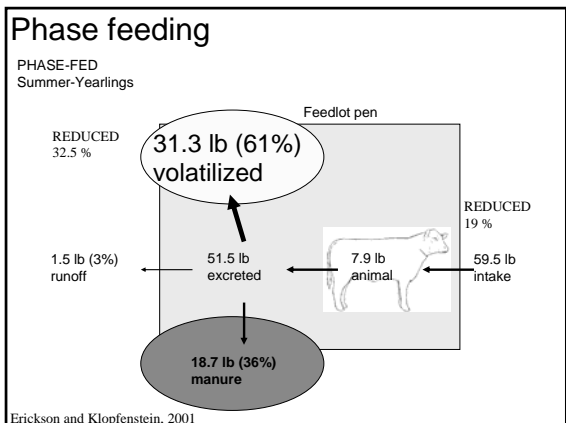










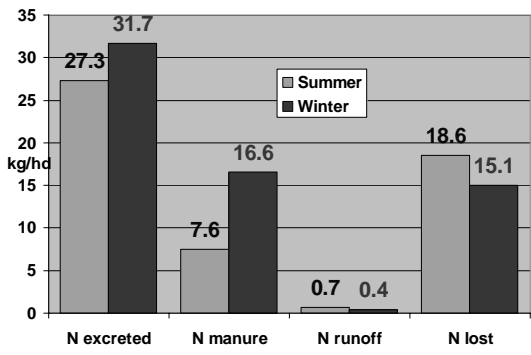


How much N in manure?

- Data from 18 experiments (244 pen means) over 10 year period were summarized.
 - Make long term comparison between seasons.
 - Characteristics & amount of manure from open feedlot pens. (Kissinger et al., 2006)

Bierman et al., 1999 <i>J. Anim. Sci.</i>	Erickson and Klopfenstein, 2001a <i>TheScientificWorld</i>
Erickson and Klopfenstein, 2001b <i>TheScientificWorld</i>	Erickson et al., 2000 Nebraska Beef Rep.
Farran et al., 2006 <i>J. Anim. Sci.</i>	Adams et al., 2004 <i>J. Anim. Sci.</i>
Sayer et al., 2005 Nebraska Beef Rep.	Sherwood et al., 2005 Nebraska Beef Rep.

Effect of temperature on N

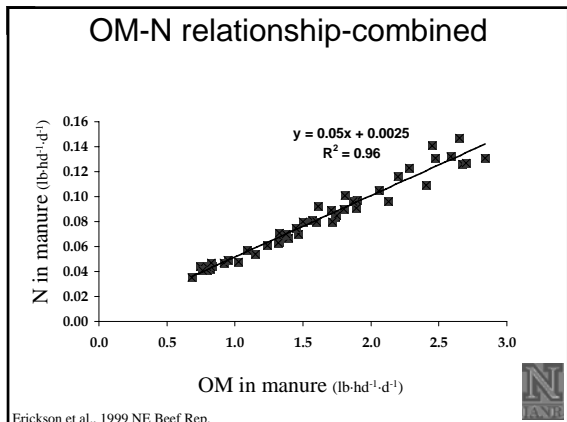


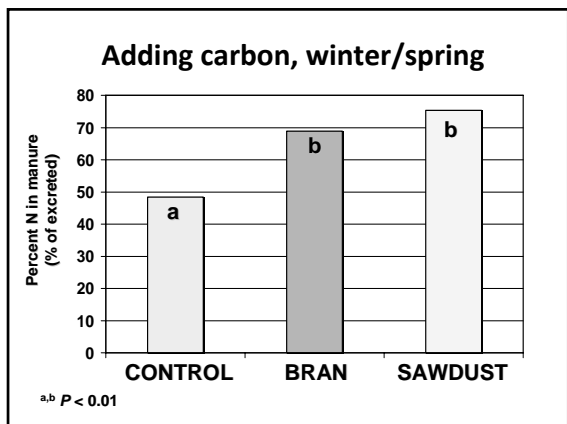
Decreasing surface area Cleaning frequency

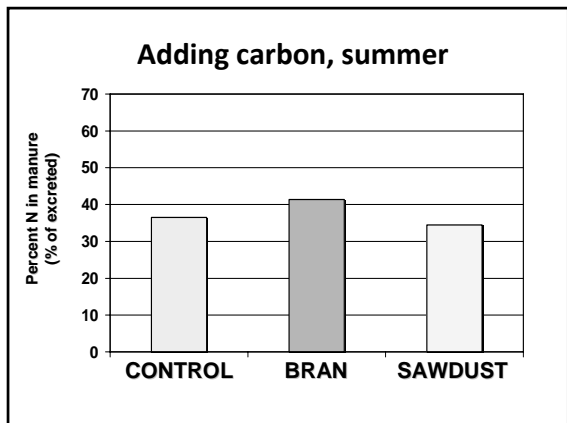
Item	2001		2002	
	Monthly	End	Monthly	End
DM	1464	803	1529	1103
OM	440	230	449	269
N manure	21.3	12.6	21.3	15.8
N loss	36.9	45.6	26.6	33.6
N loss, %	63.6	78.4	55.5	68.0

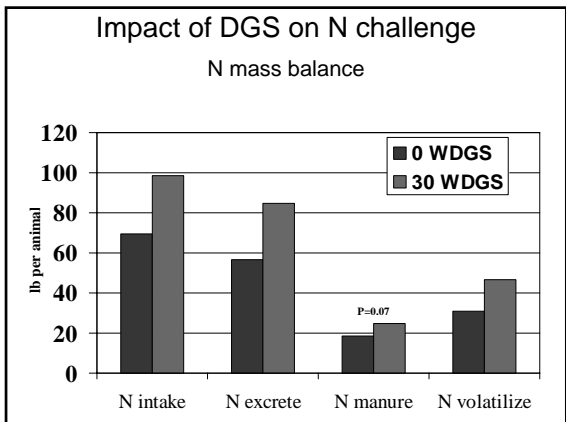
2001 54 pens, 1.45 – 1.57% N
2002 48 pens, 1.39 – 1.43% N

Wilson et al., 2004 Nebraska Beef Report, pp. 72









- ### Conclusions-open lots
- Nitrogen intake may not impact manure N
 - As N intake increases
 - N excretion increases (urine)
 - Manure N depends on other factors (open-lots)
 - Key: If N is in manure, then less N lost via NH₃
 - OM is required to retain N in manure
 - bedding
 - less digestible diets?
 - Clean frequently-decrease surface area exposed
 - Need more effective (cheap) methods for future!
 - Acidify manure (acid, DCAD)
 - Byproducts will impact manure N and N loss

Manure Value

\$/ton (70% DM)

Item	2006	2008
0 WDGS	4.14	14.23
20 WDGS	5.62	19.53
40 WDGS	7.26	25.27

Assumptions: Using the FNMP\$ model
 \$0.19/lb N; \$0.26 lb P2O5; 2006
 \$0.55/lb N; \$0.98/lb P2O5; 2008
 Much of this value is from P, not N


Bremer et al., 2009 beef report

Manure Composition -6 commercial feedlots




Item	Winter/Spring	Summer/Fall
Amt, lb	17.5	14.3
DM, %	70.6	76.5
OM, % DM	33.5	34.6
N, %	0.99	1.17
P, %	0.47	0.58
P ₂ O ₅ , %	1.08	1.33

Kissinger et al., 2006 beef report

Composting vs. Stockpiling



Galen Erickson, Matt Luebbe,
others






Change during composting

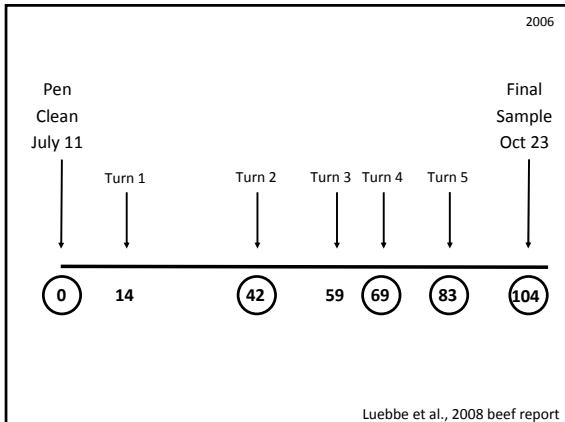
Time	manure compost		Recovery rates		
	DM	DM	As-is	DM	N
Oct	74.3	77.8	86.3	90.4	60.5
May	59.2	79.4	64.3	85.3	59.8

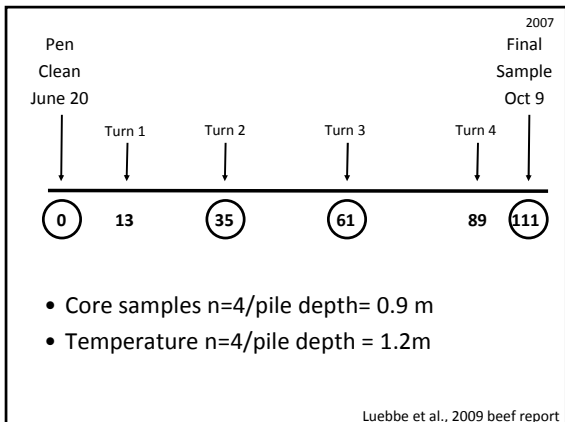
Based on feedlot nutrient balance experiments
Recovery based on manure nutrient hauled, weight of
compost calculated assuming ash weight constant

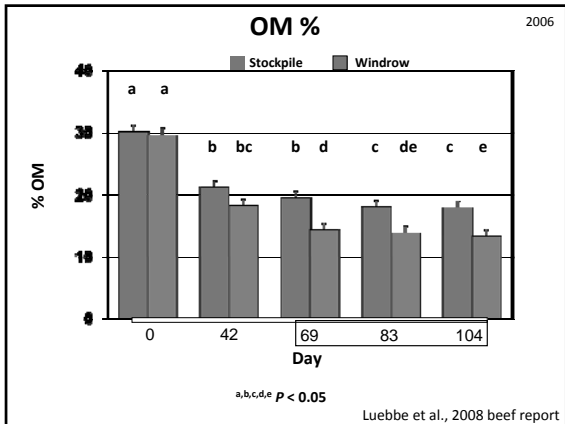
- Fresh
- Stockpile
- Compost

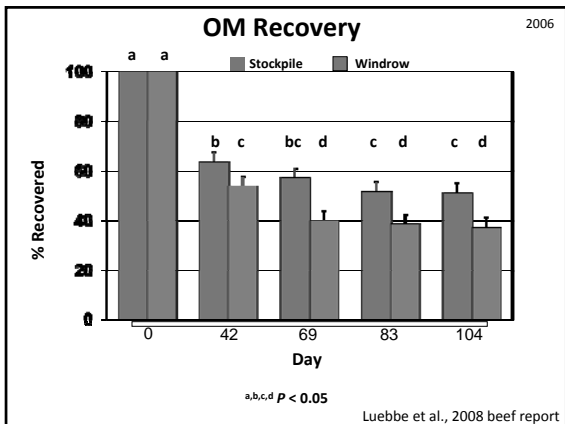


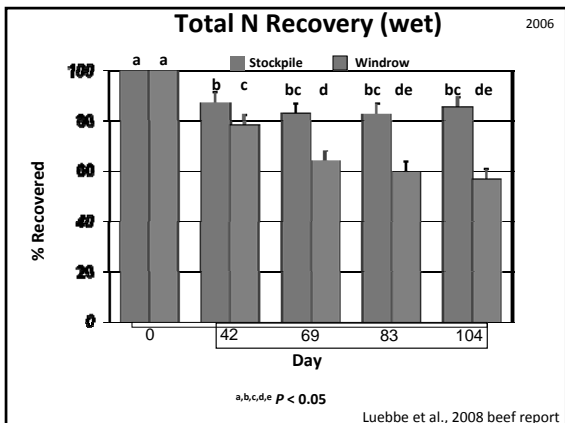
- Nitrogen
Fresh > Stockpiled > Composted
Larney et al., 2006
- Nutrient recoveries in finished compost
is greater when OM is increased
Adams et al., 2004; Farran et al., 2005

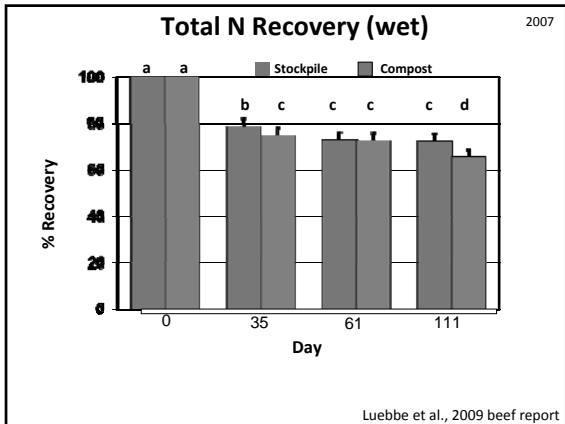


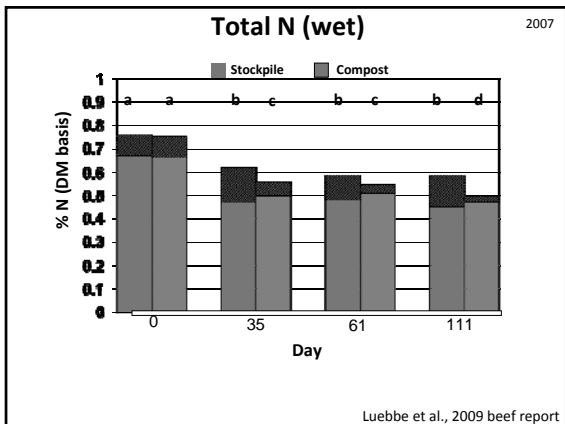


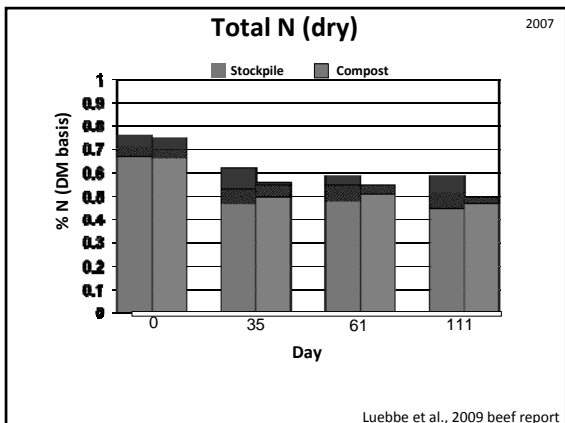












Summary

- Largest loss of nutrients occurs early during storage
- Similar DM, OM recoveries
- NH₄ greater for stockpiled manure
- Organic N greater for composted manure
- Total N (wet or dry) greater for stockpiled manure
- No nutrient advantage to windrow composting,
 - expense
 - Other ancillary benefits: uniformity, weed seeds, odor, drying in wet years, etc.

Beef Extension Page
<http://beef.unl.edu>

Beef Reports

**2009
Beef Cattle
Report**

**UNIVERSITY OF
Nebraska
Lincoln**

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